

CLAIMS

1. A wrench drive rotation hand tool with a side handle, A wrench driven rotation hand tool with side handle of the present invention has at the middle of its column provided a transmission gear set. 5 One end of the column is provided with a main shaft driven by the transmission gear set, and the main shaft in turn drives a cutter or a tool locked to the hand tool; a transmission gearbox is provided with a manually driven, reciprocal wrench handle; as required, a lateral side handle extending in radius may be provided to the middle of the column and an axial knob, to the end of the column not provided with the main shaft; either of the lateral side handle or the axial knob, if not both, must be provided; the relative angle between the lateral side handle and the reciprocal wrenching handle may be determined as required or made adjustable; with the 10 specific structure as described above, the manually reciprocal wrenching is applied to drive the transmission gear set through a one-way transmission, and further to drive the main shaft for producing rotation drive; or the main shaft is driven by a transmission gear set of constant speed ratio, acceleration, reduction, variable speed, or variable direction to exercise rotation drive in conjunction with the tool adapted to a chuck incorporated to the main shaft, thus to achieve the purpose of manually driven drilling, or fastening or loosening a screw, nut or wooden screw. 15
2. A wrench drive rotation hand tool with a side handle as claimed in 20 Claim 1, wherein, a column 101, a chuck is provided at a main shaft extended from one end of the column 101, or saving the chuck, a tip of a tool, such as a screwdriver, socket, or flare nut wrench, is directly provided to the main shaft, or a jaw for the insertion of the tip of a tool, such as the screwdriver, socket, or flare nut wrench is provided to define an output interface 102 of the 25 30

main shaft ; and an axial knob 103 may be provided to the other end of the main shaft as required while an lateral side handle 104 extending in radius may be provided to the middle of the column 101 as required; is characterized by that at the middle of the column 101, it is provided with:

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- a reciprocal wrenching handle 106: laterally provided extending in radius from the column 101, and coupled to a one-way drive 109, a grip 108 is outwardly extended for the user to hold and wrench in a preset direction while a transmission gear set 107 is driven by the one-way driver 109 to drive the main shaft and the chuck to further drive the tool or the cutter.

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3. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, the reciprocal wrenching handle 106 of the wrench driven rotation hand tool with side handle is laterally provided extending in radius in relation to the one-way drive 109.

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4. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, a knuckle joint 110 is provided between the reciprocal wrenching handle 106 and one-way drive 109 so that the reciprocal wrenching handle 106 can be push down in the direction parallel with the column 101 to facilitate storage; similarly, another knuckle joint 110' may be provided between the lateral side handle 104 and the transmission gear set 107 so that the lateral side handle 104 can be pushed down to facilitate storage; and either the reciprocal wrenching handle 106 and the lateral side handle 104 can be fixed to the one-way drive 109 or to the transmission gear set 107.

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5. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, one screw hole or multiple screw holes 112 at different angles may be provided on the transmission gear set; and

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a worm gear 111 and one screw hole or multiple screw holes 112 at different angles may be provided to the lateral side handle 104 so that the lateral side handle 104 is made retractable to the transmission gear set with angle adjustable.

- 5 6. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, The one-way drive 109 is provided at where between the reciprocal wrenching handle 106 and the transmission gear set 107 so to transmit kinetics created by pushing the reciprocal wrenching handle 106 in one direction to the transmission gear set 107, or the reciprocal wrenching handle 106 is idling when pushed in the other direction; the transmission direction and the idling drive direction can be fixed, or a switch 109' allowing interchange of direction may be provided on the one-way drive 109; and the switch 109' may be further provided with an intermediate location to permit drive in both ways.
- 10 15 7. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, the transmission gear set 107 includes a conventional planet or parallel gear set for driving the main shaft and the chuck; the transmission gear set includes an external transmission acceleration gear set includes that of equal speed ratio, acceleration ratio, and reduction ratio, or an external transmission reduction gear set, or an external transmission equal speed gear set, or an internal transmission acceleration gear set, or an internal transmission reduction gear set, or the planet gear set or other conventional transmission.
- 20 25 8. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, as required, the transmission gear set 107 may be made to permit switching among speed ratios, or output rotation directions.
- 30 9. A wrench drive rotation hand tool with a side handle as claimed in

Claim 1, wherein, the transmission gear set 107 is comprised of the planet gear set, the output features that the reciprocal wrenching handle 106 is provided to drive a sun gear and is fixed to the column by means of an external gear while the arm of the planet gear set drives the output interface 102 of the main shaft.

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10. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, the transmission gear set 107 is comprised of the planet gear set, the output features that the reciprocal wrenching handle 106 is provided to drive an external gear and is fixed to the column by means of a planet gear set while the sun gear drives the output interface 102 of the main shaft.

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11. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, the transmission gear set 107 is comprised of the planet gear set, the output features that the reciprocal wrenching handle 106 is provided to drive the arm of a planet gear set, and is fixed to the column by means of the arm from the external gear while the sun gear drives the output interface 102 of the main shaft.

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12. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, the transmission gear set 107 is comprised of the planet gear set, the output features that the reciprocal wrenching handle 106 is provided to drive the sun gear and is fixed to the column by means of the arm of the planet gear set while the external gear drives the output interface 102 of the main shaft.

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13. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, the transmission gear set 107 is comprised of the planet gear set, the output features that the reciprocal wrenching handle 106 is provided to drive the arm of the planet gear set and is fixed to the column by means of the arm of the sun gear while the external gear drives the output interface 102 of the main shaft.

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14. A wrench drive rotation hand tool with a side handle as claimed in

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Claim 1, wherein, wherein, the transmission gear set 107 is comprised of the planet gear set, the output features that the reciprocal wrenching handle 106 is provided to drive the external gear and is fixed to the column by means of the arm of the sun gear
5 while the arm of the planet gear set drives the output interface 102 of the main shaft.

15. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, the rotation driving force from the main shaft is transmitted to the tool or the cutter by having the output interface 102 of the main shaft made in a spiral, or tapered, or a straight key, or any other conventional means to incorporate the main shaft and the chuck for mounting the adjustment chuck provided with a screwed hole or tapered hole or parallel hole to hold the tool or the cutter.

10 16. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, the rotation driving force from the main shaft is transmitted to the tool or the cutter by having the output interface 102 of the main shaft forthwith made into a working tip of the tool, including that of a screwdriver, a flare nut wrench, a socket wrench, or any other specific tool.

15 17. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, the rotation driving force from the main shaft is transmitted to the tool or the cutter by having the output interface 102 of the main shaft made in a structure of an insertion bit, an insertion bit with a hole, or any jaw that incorporates by magnetism to any tool or cutter for receiving the insertion of a working tip from a screwdriver, or a flare nut wrench, or a socket wrench.

20 18. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, the axial knob 103 is provided whenever the rotation hand tool requires the axial knob 103 for holding or

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5 applying axial pressure.

19. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, if the rotation hand tool does not require the axial knob 103, the installation of the axial knob 103 is not selected.

10 20. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, the lateral side handle 104 is selected whenever the rotation hand tool requires the lateral side handle 104 for holding, applying axial or direct wrenching on the main shaft, and the relative angle between the lateral side handle 104 and the reciprocal wrenching handle 106 may be preset or made adjustable as desire; furthermore, a knuckle joint 110' may be provided to the lateral side handle 104 to be pressed down in parallel with the column for easy storage, or the lateral side handle 104 may be directly fixed to the column.

15 21. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, if the rotation hand tool does not require the lateral side handle 104, the installation of the lateral side handle 104 is not selected.

20 22. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, to select the one-way drive 109 and the direction controllable drive provided with the switch 109', the one-way drive 109 is selected depending on the working direction if the drive by the tool or the cutter of the rotation hand tool to the work piece is of one-way driving nature so to subject to the drive from the reciprocal wrenching handle 106; and driving in the opposite direction resulting in idling.

25 23. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, To select the one-way drive 109 and the direction controllable drive provided with the switch 109' the

direction controllable drive provided with the switch 109' is selected in case of the working nature requires both ways for the reciprocal wrenching handle 106 to drive.

24. A wrench drive rotation hand tool with a side handle as claimed in
5 Claim 1, wherein, in the course the reciprocal wrenching handle 106 is driving the transmission gear set 107 to execute acceleration output, the lateral side handle 104 and the reciprocal wrenching handle 106 are used to directly wrench the main shaft with greater torque in case of a heavier load.

10 25. A wrench drive rotation hand tool with a side handle as claimed in Claim 1, wherein, in the course the reciprocal wrenching handle 106 is driving the transmission gear set 107 to execute reduction output, the lateral side handle 104 and the reciprocal wrenching handle 106 are used to directly wrench the main shaft with less torque and faster revolution speed in case of a lighter load.

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